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Asthma Care by Unlicensed Personnel in The Elementary School Setting: A Training Program

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Dedication

With genuine gratefulness and warmest regard, I dedicate my work to God, who walks beside me in all that I do. To my parents, who are the utmost inspiration and left their roots to offer me the opportunity to dream and reach for the stars. To my incredible sons, Brian, and Brandon, who encouraged me to never give up on my dreams, to my beautiful, caring siblings, who wholeheartedly support me in the rough times and root me on in the good times. To my wonderful family and amazing friends, my deepest thanks for your support, believing in me, and for allowing me time away from you to pursue this goal. There are no words to express how much I love you all. Thank you for supporting me on this extraordinary journey. This project is dedicated to you.

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Abstract

This Quality Improvement project (QI) aims to improve the competence and confidence of unlicensed school health staff in identifying asthma symptoms, reading an asthma action plan, asthma care, emergency response, medication delivery tools, and trigger reduction in the school setting. The QI project transpired in an Elementary School District in Los Angeles County, CA. The Project Manager, an asthma instructor trained by the American Lung Association, provided evidence-based Asthma-Basics training for health clerks (HCs), substitute health clerks (SHCs), licensed vocational nurse health clerks (LVN HCs), school office coordinators (SOCs), school office attendance clerks (SOAs), and substitute school office staff (SDO). A descriptive quasi-experimental single group design was utilized with a quantitative pretest-posttest and follow-up test methodology. An online training module, pretest-posttest, and follow-up test were provided using the Google Classroom platform. In addition, participants received a Google Slide deck consisting of 5 slides (see Appendix B) outlining instructions for the training, a link/quick reference (QR) code for pretest-posttest, a follow-up test link, QR code, and an Asthma Basics Zoom presentation link. Tests were composed of 10 Asthma Basics questions and two 6-point Likert Scales for self-evaluation in confidence and competence. The results of the ANOVA were significant, $F(2, 56) = 4.23$, $p = .019$, indicating there were significant differences in Asthma Basics Training among the levels of Tests. In addition, the Asthma training data indicated that health office staff established increased competence in identifying asthma symptoms, identifying rules of two, implementing emergency asthma procedures, trigger reduction, establishing a support network, and increased competence and confidence in asthma care.

Keywords: Asthma, exacerbation, evidenced-based training, inhaler, spacer, absenteeism, health office staff, prevalence, disparities, morbidity, health clerks, triggers, rules of two, asthma action plans, training, front office staff, credentialed school nurse, and asthma control.

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Tools

Asthma Care by Unlicensed Personnel in the Elementary School Setting: A Training Program

Worldwide, 262 million people are affected by asthma, which in 2019 caused 461,000 deaths (World Health Organization, 2020). Kew, et al. (2017) note that 20% of 13 to 14-year-olds have asthma symptoms in lower-middle-income countries. Allison, et al. (2019) state that more than 6.5 million children are affected by asthma in the United States. In addition, the Centers for Disease Control and Prevention (2019) report one out of twelve children in the United States have asthma and three students in a classroom of thirty students are affected by asthma. Overall, the Center for Disease Control and Prevention (CDC) found that people with asthma account for 439,000 hospitalizations, 1.6 million emergency room visits, and 10.5 million medical provider visits.

Scope of the Problem

Childhood asthma has reached disproportionate levels and has become the most common chronic respiratory disease in children. In addition, Dharmage, et al. (2019) state that pediatric asthma in the United States (US) has become a primary non-communicable epidemic affecting children's health, attendance, learning, and overall school success. Darmage, et al. (2019) further note that asthma in children is a significantly expanding global concern, especially in low to middle-income countries. In addition, asthma is ranked among the sixteenth cause of years lived with disability and twenty-eighth reason among the leading causes of living with the burden of disease. Kew, et al. (2017) also notes asthma as a severe condition in which forty percent of children with asthma present in clinics with uncontrolled disease. Furthermore, the author highlights children under five are most affected by uncontrolled asthma, with about 5.1 million children affected.

Allison, et al., (2019) adds approximately 13% of students miss 15 or more days of school each year due to asthma, and it is responsible for 13.8 million missed school days annually. McCabe, et al. (2019) noted asthma as the leading health problem in school-aged children and is strongly associated with school absences. Approximately 36,000 children miss school each day due to asthma symptoms. The CDC (2019) reports asthma prevalence is high in higher-income countries, however, children in low to middle income countries are most affected, missing learning opportunities and having the most asthma-related mortality rates.

Asthma Disparities

Asthma and Allergy Foundation of America (AAFA, 2021) states asthma has been observed in disproportionate numbers amongst minority groups, specifically among children in the inner-city and lower-income populations. The AAFA also notes that Black Americans and Hispanics are twice as likely to be diagnosed with asthma and die from an exacerbation than White American children. Predisposing factors linked with minority group disparities include lack of healthcare access, financial means, transportation, poor living conditions, inadequate asthma knowledge, and cultural beliefs that contribute to poor control.

Gap Closure

Asthma is a lifelong chronic disease that cannot be cured but can be controlled with lifestyle adaptations and medication. A school can support achieving asthma control by providing asthma education to school staff, students, and families. However, the school environment frequently poses a unique challenge between school staff, parents, and students, making it challenging to collaborate due to various barriers. Kew et al. (2017, as cited by NRAD, 2014) identify some common barriers encountered in the school districts: language, literacy,

collaboration, lack of a credentialed school nurse, and health staff with limited asthma knowledge.

Asthma management requires a multidisciplinary approach. The most crucial step to removing school barriers is asthma education for school staff to increase competence and confidence in administering asthma care. Managing asthma ineffectively or missing significant symptoms could result in hospitalizations or mortality. The Asthma and Allergy Foundation of America [AAFA] (2021) reports that 185 children died from asthma-related symptoms nationwide. Kew et al. (2017, as cited by NRAD, 2015) state that children continue dying of asthma exacerbations at home and school. Nine out of ten asthma-related deaths involve potentially avoidable factors such as lack of asthma control, improper medication administration, overuse of quick-relief medication, and lack of regular health care. Healthy People (2020) report a baseline of 3.4 deaths per million children and adults under 35 years of age.

Healthy People (2030) RD-1.1’s objective aims to reduce deaths among children and adults under age 35. For example, the CDC's (2019) most recent national asthma death rates in children list children aged 0-4 years had 14 deaths with a standard error of -3 (0.19), and Children under eighteen years had 178 deaths with a standard error of 2.4 per million 2.4 (0.18). Moreover, in the age group of eighteen and over, CDC notes 3,346 deaths with a standard error of 13.1 (0.23). The CDC (2017) notes, that asthma prevention and management education programs are key to reducing asthma disparities in health care. It is imperative to reduce asthma exacerbations and death rates by using strategies to remove disparities, such as providing evidence-based asthma training opportunities to people caring for children with asthma such as school health staff.

Over the last several decades, there have been notable advances in asthma. Leading experts from the CDC and National Asthma Control Program (NCAP) collaborated to create guidelines, awareness, and federal health policy to improve the quality of life for children who have asthma (CDC, 2018).

Schools are an excellent place for asthma intervention because children are in school 1/3 of the day. In addition, school health office staff are ideal for assisting students with asthma control and emergency asthma care and linking them to the credentialed school nurse, the parents, pediatrician, and community resources. School health offices are staffed by Non-Licensed Health Clerks (HCs), Licensed Vocational Nurse Health Clerks (LVN HCs), and Substitute Health Clerks (SHCs). The School Office Coordinator (SOCs), School Attendance Clerks (SOAs), and Substitute School District staff (SDO) receive the same training as HCs and staff the health office when the HCs are attending to student medical needs. For this project, School Office staff are combined and labeled as SOs. Health staff asthma training was limited to asthma introduction information and first aid intervention. The current training program can benefit from being supplemented with the latest EBP asthma management guidelines to support HCs competence and confidence (ALA, 2021).

Critical Appraisal of the Literature

Keywords Searched

A systematic search was completed in nine databases: Center for Disease Control and Prevention, PubMed, Medline, Cochrane Library, American Lung Association, Asthma, and Allergy Foundation, National Association of School Nurses, and California School Nurse Association.

Keywords searched were asthma management, unlicensed school staff, school nurse, asthma training, evidenced-based, asthma care, asthma evaluation, asthma confidence, asthma competence, training evaluation, asthma deaths, or asthma disparities. In addition, the search term combination strategies were adjusted for each database. Other keywords used were asthma, prevalence, unlicensed school health office staff, asthma education in the school setting, school nurse asthma competence, asthma confidence, evidenced-based asthma training, American Lung Association Asthma Instructor course, asthma action plans, asthma morbidity/mortality, school nurse shortage, pretest-posttest, and disparities in the school setting.

HCs are uniquely suited to provide quality asthma care and support to patients and families. The American Academy of Allergy Asthma & Immunology (2020) states that evidence-based asthma education makes schools safer for children with asthma. Health office staff can play a significant role in improving school attendance, reducing asthma triggers, following up on asthma action plans, and establishing regular activity for children affected with asthma. In addition, they are in a critical position to successfully reduce chronic symptoms by coordinating and working with the CSN to establish communication with the parent and medical provider (McCabe, 2019).

Adherence to Treatment

Inhaler non-compliance is a common pharmacologic issue affecting asthmatic patients. Asthma exacerbations can be correlated directly to treatment non-adherence (Ahmad et al., 2018). Ahmad et al. (2018) additionally noted that other contributing factors in treatment non-adherence are medication misuse, poverty, fear of dependency, poor health literacy, and social stigma.

Cultural Disparities

Health beliefs of the patient and/or the family can contribute to non-adherence. Tackket, et al. (2020) states that a family's opinion of a family member's "health condition" or the patient's health and medication beliefs influence the patient's adherence to treatment and impact the type of medication or device preferred. It is essential to familiarize school staff with diverse cultural beliefs and patient preferences to support student medication adherence and proper medication technique monitoring. Hawken et al. (2017) acknowledge evidence that patients express preferences in the type of asthma inhalers, size, name brand, taste, and delivery method. Finding the correct inhaler for the patient can remove cultural stigma, break down learning barriers, and increases the student's likelihood of following their asthma action plans. Overall, family support is associated with fewer adherence barriers and greater intent to adhere to inhaled medications.

It is important to note that children's medication delivery is limited to nebulizer treatments or Pressurized Metered Dose Inhaler (PMDI) with a spacer with or without a mask. Students should use the delivery method that best fits their ability and preference in schools. The school staff is in an ideal position to assist with medication adherence and technique monitoring. They assist students inadequately administering their medication and communicate with CSN's to report concerns (McCabe, 2019).

Role of Credentialed School Nurses

CSN’s, assess students’ health issues and facilitate equity in medical support and academic access at school (Quaranta et al., 2015). They are responsible for training and ongoing evaluation of non-licensed and licensed vocational nurses who staff the school health offices. Once trained, health office staff serve as a knowledgeable asthma resource and link for families with students with asthma. In addition, CSN’s collect, interpret, monitor, and use data to develop population-based programs and identify students at risk for absenteeism and other issues

affecting access to academics due to health or social concerns. Finally, they use their expertise in population-based care to create programs that provide health education and health screenings, which increases return-to-class rates (AAP, 2016; NASN, 2015; NASN, 2016). Unfortunately, due to budget cuts and nursing shortages, not all school districts have a CSN or have one or two CSN's covering a school district. Kew et al. (2017) noted that another disparity in the absence of a school nurse is that an HCs competence and confidence in asthma care are affected. It was noted that school-aged asthmatic students attending a school without a school nurse on staff encountered additional barriers that impacted their asthma control and access to academics (Kew et al., 2017). The American Academy of Pediatrics (2016) recommends that schools have a minimum of one full-time CSN in every school. This recommendation further supports Healthy people (2020), including goals to have a school nurse-to-student ratio of 1:750 in elementary and secondary schools (CDC, 2017).

Asthma Management Barriers

McCabe et al. (2019) note the importance of knowledgeable staff to assist children, particularly with the asthma inhaler technique, due to their physical limitations and inability to handle the inhaler. In addition, McCabe identifies the suboptimal use of inhalers that may result in uncontrolled asthma and increased costs, Usmani et al. (2018) report that there has been an explosion of new types of metered-dose inhalers introduced in the market. This plethora of inhalers has left healthcare providers and patients challenged to learn how to prepare and use inhaler devices properly. Not knowing how to use an inhaler is a limiting factor that can lead to uncontrolled asthma and adverse outcomes. Usmani et al. (2018) highlight inhaler misuse as a common limiting factor for patients who present with uncontrolled asthma. The risk is highest for children who misuse their inhalers and are monitored by staff who cannot assist them

properly, putting them at risk for a potentially poor outcome. Asthma competent and confident health staff can assist children during their inhaler treatment and identify if a treatment is effective or ineffective. In addition, having asthma competent and confident health office staff will help children learn how to properly use metered-dose inhalers, ultimately leading to improved asthma outcomes. Shum et al. (2017) report that poor adherence implications to preventable disease progression are due to multiple factors such as ethnocultural, a patient's disease perception, type of treatment or medication, religious beliefs, language barriers, and other multiple factors. In addition, patients from ethnocultural backgrounds face barriers in health care parity and other health disparities not addressed in the modern medical model (Shum et al., 2017).

Cultural and religious beliefs can be a muted issue and quietly impact people affected by asthma. Asthma care can be affected due to a personal or family member's beliefs regarding inhaler use or lack of trust in the medication resulting in poor adherence, asthma control, and medical follow-up (Tackett et al., 2020).

Some cultures are family-centered, and family approval in medical decisions can impact the outcome. This cultural practice provides the patient with family support; however, it can potentially affect a patient's disease control and outcome if the family has cultural or religious beliefs that create barriers to medical care. Unfortunately, this issue is real and rarely discussed during provider visits, and patients go on without speaking about it while their disease remains uncontrolled and progressing. In addition, fear of taking medication, addiction concerns, preference for alternative medicine, or folk remedies interfere with asthma management directly. For example, in some cultures, taking an inhaler can be viewed as improper and could be believed to be addicting (Tackett et al., 2020).

School Setting Barriers

Kew et al. (2017) study of Asthma Education for School Staff reviewed five randomized controlled trials of 111 schools and 1005 participants. Results indicated that there was no consistent asthma control. There were no significant differences in the "Pediatric Asthma Quality of Life Questionnaire." The notable differences were minor and did not last more than 24 months. The mean difference in the intervention was 0.14, 95%, and the treatment effect confidence interval was -0.03 to 0.31, although the authors downgraded the quality of evidence to decrease bias and indirectness. There were higher mean scores in better-trained groups, even though only minor data differences were noted. Kew et al. (2017, as cited in NRAD, 2014) write about a United Kingdom study in which about 80% of asthma deaths among children were under ten years old, and one-quarter of the children were 10- to 19-year-olds. Many of the children died while being transported to the hospital. This study showed that overall asthma care at home or school was inadequate. The recommendation was for parents, children, and those who care for and teach asthmatic children to receive asthma management education (Kew et al., 2017, as cited in Gawwad, 2007).

Kindi et al. (2021), conducted a systematic review of 8 studies of educational programs for school nurses, by examining asthma educational programs. A onetime study of an asthma education program that was comprised of four interventions were followed by practical demonstrations. The researchers identified a need to highlight school nurses' evidence-based asthma educational needs and preferred learning methods. Through academic surveys, the researchers also recognized the need for ongoing skill and knowledge assessment strategies to ensure children are receiving EBP care. Research on asthma education programs noted limited opportunities for nurses to receive updated asthma education. The programs available lacked

consistency in data, strategies, assessments, and nurses reported technology accessibility as key in asthma education barrier removal. Consequently, ongoing professional development improves students' health and well-being affected by asthma.

Gap in Practice

The CSN is in a critical position to provide asthma training for unlicensed staff and remove asthma disparities in the school setting. The AAAI (2020) defines CSN shortages as limiting factors and setbacks. Kindi et al. (2021) suggests that while there have been significant gains in creating collaborative asthma national policies and guidelines a gap continues to exists in effective asthma management in the school setting. The lack of staff knowledge and appropriate asthma interventions in the school setting has created a barrier to asthma control. It was recognized as a significant contributing factor to preventable morbidity and mortality (Kew et al., 2017, as cited in Murphy, 2006). The authors add that other barriers to asthma control in the schools include inadequate access to asthma medications, expired medications, and the absence of medical orders or orders that do not include an asthma action plan completed by the primary provider. Additional drawbacks are parents opting out of having rescue inhalers in the health office as well as students limited training to self-manage.

CSNs need to have ongoing skill and asthma assessment knowledge strategies to ensure safe asthma care is used and taught. There are many different types of inhalers, i.e., BAI– breath-actuated metered-dose inhaler; DPI–dry powder inhaler; PMDI–pressurized metered-dose inhaler; and nebulizer treatments. It is important for the CSN’s to learn how to use the new medication delivery devices and train the health office staff to properly use them and achieve good asthma control.

Project Aim

The Project Manager implemented a QI project and provided an EBP training guide for Asthma Basics training for unlicensed elementary school health office staff. The goal was to allow the staff an opportunity to increase their competence and confidence in asthma care and standardize asthma training in the school district. The implementation of this program was an effective way to reduce the risks of asthma in the school setting, provide a safer asthma environment, decrease asthma exacerbations, emergency transports, hospitalizations and potentially save lives.

Implication

This QI project implementation of a standardized asthma online training helped bridge the gap on asthma disparities in the school setting. McCabe, et al. (2019) established the need for school staff education and a standardized method to safely implement an asthma management education program for the health office staff managing patients with asthma exacerbations. (Kew, et al., 2017, as cited in Department of Health, 2015, Bates 2004) state, that asthma education for school staff aims to reduce the effect of asthma on quality of life and educational outcomes by increasing the knowledge of those responsible for the care of the young people with asthma. In addition, Stevens (2013) states that school administrators will ensure a safer school environment by integrating a healthcare intervention delivery system that is safe, timely, efficient, evidence-based, equitable, and patient-centered.

Theoretical Framework

The primary basis to support a successful asthma education program is to strategize the knowledge transformation using evidence-based practice (EBP) processes utilizing an applicable conceptual framework (Stevens, 2013). The Five-Point Stevens Star of Knowledge Model (Refer to Figure 1) anchors steps toward implementing health interventions into practice. The five-point

model supports the conversion and organization that knowledge undergoes to inform the clinical decision making the evidence-based Asthma Basics training implementation safe and successful. The Five-Point Stevens Star of Knowledge Model's conceptual framework delineates the cycle "knowledge" undergoes. The first point is the "discovery of research," which identifies the ability to inform clinical practice and decision making. Gulnar et al. (2021) suggest that it is necessary to ask the right questions to summarize valuable and accurate evidence-based practice knowledge. The second point is "Evidence Summary," which symbolizes the compiling of considerable research and compared findings that supported and directed the evidence-based asthma education program. The third point is "Translation to Guidelines," the literature and data were reviewed, and gaps of missing research or evidence were identified, which the clinician aimed to address with data and clinical expertise. The Project Manager integrated EBP clinical guidelines, asthma care standards and created a training protocol, and asthma care algorithm, and developed the evaluation pretest-posttest and follow-up questionnaires in this step. Point four, "Practice Integration," refers to recommendations that work in EBP health care. The goal was to develop and integrate the foundation of new practice guidelines into the current asthma care procedures and aimed for outcomes resulting in excellent asthma care. Point 5, "Process, Outcome Evaluation," evaluated if the desired clinical outcome was produced upon implementation of the intervention? For example, did the intervention improve the asthma competence of the individual health staff members? Likewise, in this step, the project manager evaluates if there were significant findings in the health office staff's competence and confidence in asthma care.

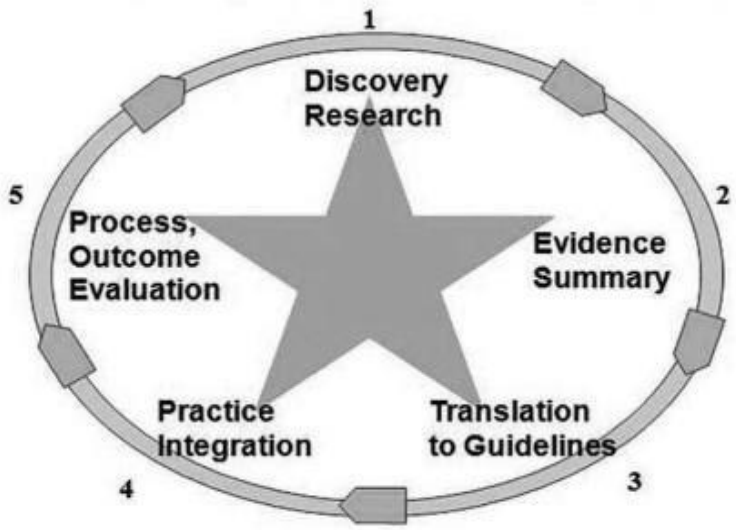

FIGURE 1. Stevens Star Model of Knowledge Transformation.
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Figure 1. Stevens Star model of Knowledge Transformation

Methods

Design

The Quality Improvement (QI) project design is a Quasi-Experimental single-group quantitative pretest-posttest methodology.

Setting

The QI project took place in a public school district in Los Angeles County, CA. The school district's City is 14.8 square miles, located 12 miles southeast of the City of Los Angeles. The city has four K-8th grade school districts and one 9th-12th grade high school. The participating school district is comprised of ten elementary schools, three middle schools, and has approximately 8,800 students. The health service program consists of 14 HCs (6 licensed vocational nurses-HCs and 8 non-licensed HCs). Health offices are staffed with HCs Monday to Friday, six and a half hours a day. HCs are non-licensed staff trained in CPR, first aid, and health

office procedures. Licensed Vocational Nurse HCs are trained in health office procedures, first aid, and delegated medical procedures. There are 13 health offices in the school district, each approximately 15 x 15 feet, located in the school site's main offices. They have an exit to the school grounds and a restroom. The HCs evaluate approximately 25-40 students for health-related needs daily. They attend to injuries, seizures, diabetic management, asthma care, medication assistance, head injuries, acute illness, and upper respiratory infection symptoms, among other conditions. The most common health condition in the school district is asthma (LACOE, 2020).

Each CSN oversees the health offices in four to five schools. In addition, there are special education preschools in three elementary schools. There is a "STEP" program for emotionally challenged children and an "Opportunity Program" for students with behavioral issues. Each CSN carries a caseload of 2,500 or more students or four schools. With significant caseloads, the CSN’s are unable to be in the health office and care for asthmatic students. Having few CSN’s and more significant caseloads strongly supports the need for evidence-based asthma training for health office staff.

In preparing to implement the evidence-based asthma training program, the Quality Improvement manager completed the American Lung Association Asthma Educator course and received a participation certificate (see Appendix E). Knowledge obtained in the course was utilized to provide evidence-based asthma basics education.

Sample

The project participant inclusion criteria included unlicensed Health Clerks (n=8), Licensed Vocational Nurse Health Clerks (n=6), Substitute Health Clerks and District Office

substitutes (numbers vary), School Attendance Clerks (n=13), and School Office Coordinators (n=13).

Exclusions

Credential School Nurses, Registry Health Clerks, Registry Licensed Vocational Nurses, substitutes, and Student Nurses were excluded from participating in the QI project. These exclusions were made because temporary staff are less likely to work long-term assignments and would be unable to participate in the three phases of the QI project.

Data

The dependent variables and outcome descriptions concerning asthma management self-efficacy, comfort, and confidence levels are noted in Table 1. The pretest-posttest consisted of 10 questions formulated on the American Lung Association Asthma Basics Training Program PowerPoint. A Google Form pretest-posttest consisted of eight multiple-choice and two true and false questions. In addition, there were two 6-point Likert learning scales. The Likert scale evaluated self-reported points for competence and confidence as follows: 1= no confidence at all, 5= extremely confident, 6= not applicable. The pretest-posttest was offered using a Google Form, and an access link was embedded on the PowerPoint slide deck and offered through Google Classroom. The follow-up test was offered at three months.

After the training the CSN's conducted in person asthma skills checks with the health office staff. The QI Project Manager provided skills check workshops and utilized The Green Book Asthma Guidelines skills check form (Appendix A) and the Asthma Emergency Procedure checklist to evaluate competency (Appendix D).

Procedures

Planning and Training

The Project Manager implemented the evidence-based asthma training intervention to improve the health office staff's competence and confidence in asthma care. The training included identifying asthma symptoms, asthma care, emergency intervention, and trigger prevention in the school setting. In addition, the following handouts were distributed in Google Classroom: (a) American Lung Association Asthma Basics slide deck with pretest-posttest access information, and (b) emergency procedure checklist for severe asthma.

The Green Book: Guidelines for Specialized Physical Health-Care Service (2020), an emergency procedure checklist for severe asthma, was reviewed with participants in the online training and in-person skills checks. In addition, the HCs posted the emergency checklist in the school health offices for quick reference (see Appendix D). The project training was combined with the annual health office training program (August 4, 2021) and proceeded in three phases.

In the First Phase (August 4, 2021), the health office staff-initiated training with general health office protocols and standard health-related Keenan modules (Keenan Safe Schools, 2021) and Keenan module assisting with medication during the regular school day. In addition, they viewed the online modified American Lung Association Asthma Basics Zoom module training and PowerPoint (Appendix B & C) in Google Classroom. The asthma basics slide deck included two additional slides with a link and QR code to access the google form pretest-posttest questionnaire, school recommendations by Global Initiative for Asthma (GINA), and the guidelines from The Green Book for severe asthma checklist plan rationale.

In addition, the Project Manager trained participants on non-pharmacological intervention measures, the importance of asthma action plans, medications assistance, asthma history questionnaires, identifying asthma flare-ups, the role of the CSN, establishing parent

communication, asthma care coordination, when to call emergency services and documentation during the annual health clerk training.

During Phase Two (August 5-16, 2021), participants met with the CSN for an in-person skills check and demonstration on how to assist and monitor the student using a metered-dose inhaler with and without a spacer, peak flow measurements, and how to read the asthma care plan. In addition, the Green Book Training Evaluation and Review for Qualified Designated School Staff Health Procedure: Performance of a Health Care Procedure and the Asthma Episode Response form was utilized for the checkoffs.

Phase Three (August 17, 2021- November 15, 2021) The health office followed the asthma procedure checklist. As per The Greenbook delegation procedure, the health staff assisted asthmatic students with inhalers guided by the asthma action care plan. In addition, the CSNs observed participants caring for children with flare-ups, ongoing monitoring and case-by-case support was provided throughout the school year. Finally, the follow up test was posted on the Google Classroom platform on November 15, 2021.

Analysis

Data of the QI initiative was collected over three months. The evaluation design was a pretest-posttest offered before and after the training intervention and a follow up test at three months. The QI project results were analyzed using aggregated de-identified data, pretest-posttest data, descriptive statistics, and two 6-point Likert scale scores. In addition, Intellectus Statistics was used to analyze data and generate a written interpretation of statistical data output.

Risks

This QI project posed minimal foreseeable risks or discomfort to the participants. The questionnaire evaluated the competence and confidence levels of the participants while providing

students asthma care. Informed consents were not required, and participants received information about the QI project, benefits, and risks in the pretest-posttest Google Form introduction. There was a potential for anxiety with test-taking for some participants that may have contributed to nonparticipation. The Project Manager informed participants the tests were anonymous and not graded to mitigate test taking anxiety. The aggregated data will be kept in the Project Manager's password-protected computer and within the school district password-protected database for three years after the project is complete and or after the project results are published. Any identifying data will be destroyed at the end of 3 years. The computer will be locked in the office when the Project Manager is away.

Benefits

The asthma education class aimed to increase the competence of those responsible for caring for children with asthma. The goal was to implement evidence-based asthma management education and non-pharmacological interventions to encourage and promote effective care for students with asthma. In addition, the goal included increasing preventive measures to reduce asthma symptoms by early symptom identification to reduce the effects of asthma on the quality of life and education for students with asthma. (Kew, et al., 2017)

Cost

There was no additional cost for this project to the participants or the School District. The evidence-based asthma training class was integrated into the yearly health office training program.

Payment

There was no formal compensation for participation.

Confidentiality

The pretest-posttest data were de-identified, and the google form only collected a school site name. Each school site had several participants, which kept participation confidential. No identifying information was included in publication or dissemination.

Results

This Quality Improvement (QI) project strengthened asthma care competence among unlicensed school health office staff. School health staff consisted of health clerks (HCs), substitute health clerks (SHCs), licensed vocational nurse health clerks (LVN HCs), school office coordinators (SOCs), school office attendance clerks (SOAs), and substitute school office staff (SDO). SOCs and SOAs staff the health office when an HC is attending to student medical needs, and for this project are combined and labeled as SOs. These are the titles used in the results tables.

Asthma is considered a significant public health problem and can cause increased urgent care visits, hospitalizations, missed school days, missed workdays, early disability, and premature death (Nunes, et al., 2017). School health staff are uniquely positioned in the school systems and can make a difference in combating asthma exacerbations and removing asthma care disparities in the school setting (CDC, 2021).

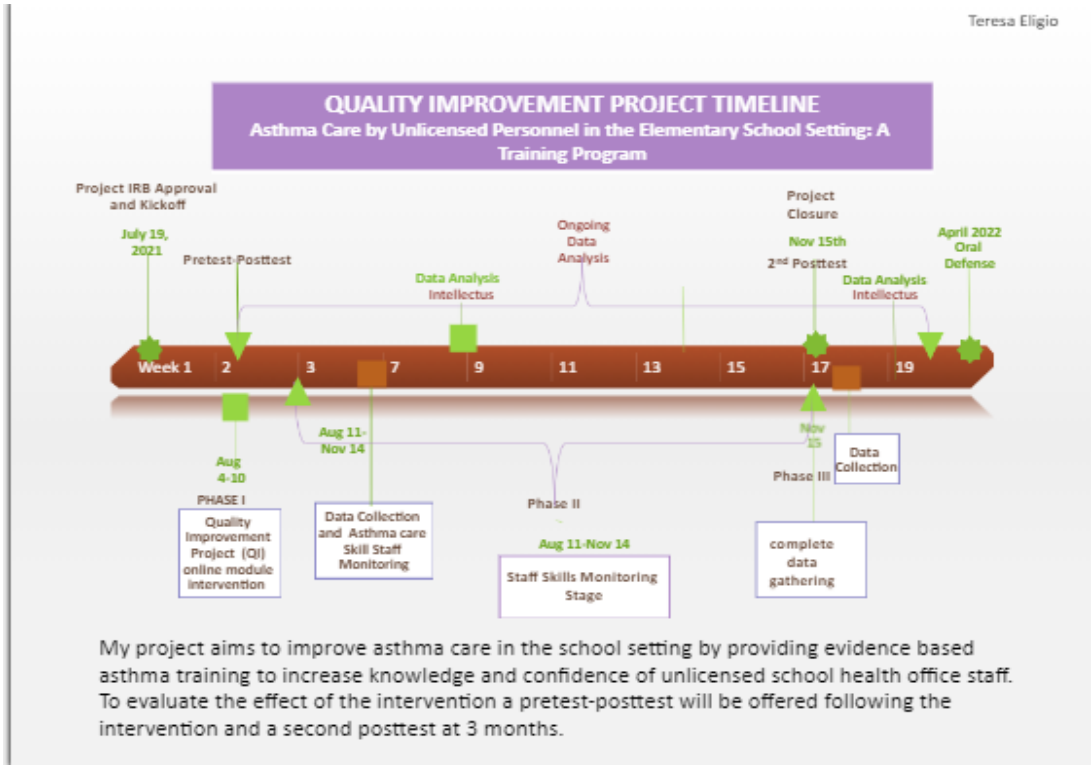
Sample Characteristics

Stakeholders participating in the QI project were from 13 schools, ten elementary and three middle schools. The online training module and pretest-posttest were provided using the Google Classroom platform. Information was distributed utilizing a Google slide deck consisting of 5 slides (see Appendix B). The slides included the training instructions, QR code for pretest-posttest, follow-up test QR code, Asthma Basics Zoom presentation link, and contact information for the Project Manager. The QI project invitation was given to SOCs (n = 13) and

SOAs (n = 13) on August 4, 2021. On August 6, 2021, it was sent to HCs (n = 7), LVN HCs (n = 6), and SHCs (n = 4) as per the QI project timeline (see Figure 2). The follow-up test was made accessible to all participants 3 months after the posttest in Google Classroom using slide number 4 in the Google slide deck for the QR code or follow-up test link (see Appendix B).

Figure 2

Quality Improvement Project Timeline



Frequencies and Percentages

Participation frequencies and percentages were calculated by title, health office years of service, and arranged by test. The pretest's most frequently observed title category was SOs staff (*n* = 22, 51.16%). Followed by LVN HC (*n* = 6, 13.95%), HC (*n* = 9, 20.93%), SHC (*n* = 5, 11.6%) and SDO (*n* = 1, 2.33%). The posttest's most frequently observed title category was SOs

staff (*n* = 18, 64.29%). Followed by LVN HC (*n* = 3, 10.71%), HC (n = 4, 14.29%), SHC (*n* = 3, 10.71%) and SDO (n = 0, 0.00%). The most frequently observed categories of Title within the follow-up test were LVN-HC (*n* = 2, 22.22%), followed by HC (*n* = 3, 33.33%), and substitute HC (*n* = 3, 33.33%) (see Table 2).

The most frequently observed category of years of health office service within the pretest category was 3-7 yrs. (*n* = 23, 53.49%) followed by 11< (*n* =15, 34.88%) and 8-10 yrs. (*n* = 5, 11.63%). The most frequently observed category of years of health office service within the posttest was 3-7 years (*n* = 14, 50.00%) followed by 11 yrs.< (*n* = 13, 46. 43%) and 8-10 yrs. (*n* = 1, 3.57%). The most frequently observed category of years of health office service within the follow-up category was 3-7 yrs. (*n* = 5, 55.56%) followed by 11 yrs.< (*n* = 4, 44.44%) (see Table 2).

QI project participation varied throughout the testing phases. Peak involvement is reflected in the pretest, with approximately 99% participation. Approximately 65% of stakeholders participated in the posttest, and 21% participated in the follow-up test (see Figure 3).

Table 2

Test Participation Frequency by Title and Years of Service

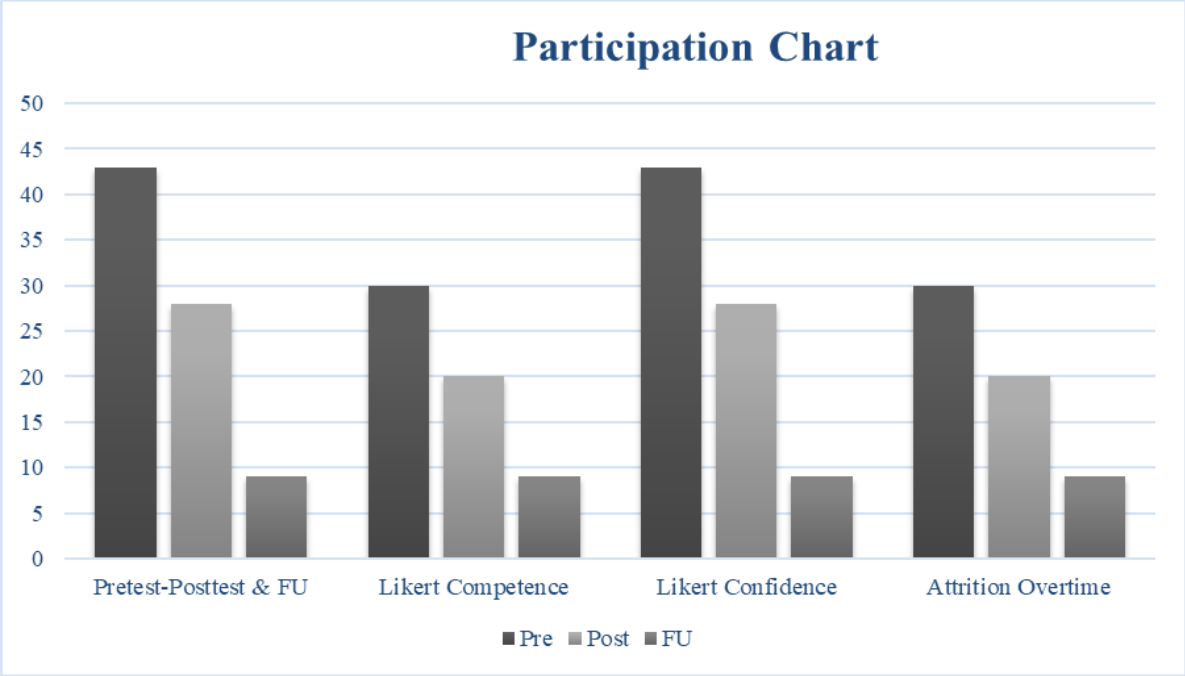
	Test		
Variable	Pretest	Posttest	Follow-up
Title			
LVN HC	6 (13.95%)	3 (10.71%)	2 (22.22%)
SHC	5 (11.63%)	3 (10.71%)	3 (33.33%)
SO staff	22 (51.16%)	18 (64.29%)	1 (11.11%)
HC	9 (20.93%)	4 (14.29%)	3 (33.33%)
SDO	1 (2.33%)	0 (0.00%)	0 (0.00%)

Total	43 (100.00%)	28 (100.00%)	9 (100.00%)
Years			
3-7 yrs.	23 (53.49%)	14 (50.00%)	5 (55.56%)
8-10 yrs.	5 (11.63%)	1 (3.57%)	0 (0.00%)
11yrs <	15 (34.88%)	13 (46.43%)	4 (44.44%)
Total	43 (100.00%)	28 (100.00%)	9 (100.00%)

Note. Due to rounding error, percentages may not sum to 100%

Figure 3

Asthma Basics Evidence Based Training QI Project Participation Chart



Note. Participation compared by pretest-posttest, follow-up, and Likert scales

Description

Participation in the Quality Improvement project was voluntary. Non-participation did not impact the ability to work in the health office, and only de-identified and aggregated data were collected. The asthma test was created using Google Forms and based on the American

Lung Association "Asthma Basics" evidence-based training. The presentation was 54 minutes in duration, and each test was estimated to take approximately 5-10 minutes.

The training module steps were outlined on five Google Slides. The first slide introduces the American Lung Association, Evidence-Based "Asthma Basic" Training and lists the presentation modification statement. The second slide lists the pretest link and QR code. The third slide incorporates the "Asthma Basics" Zoom training module. The fourth slide contains the link and a QR code for the posttest. Finally, references are on the fifth slide (see Appendix B). Upon completing the online training module, an in-person skills check with the participants was conducted. To evaluate asthma skills, the "Qualified Designated School Staff Performance of Health-Care Procedure Management of Asthma Episode Response (Appendix A) and Assistance with Medication/Equipment" form L-1, Section 3: Asthma was used (see Appendix D) (The Greenbook, 2020). The forms evaluate asthma skills competencies using six categories: (a) States the name and purpose of the procedure, (b) preparation for the procedure, (c) supply and equipment identification, (d) assesses student safety/safety issues, (e) performs steps as specified in school emergency response procedure-severe asthma attack, and (f) documents performance of procedure and student response in student information system (The Greenbook, 2020).

Analysis

The data analysis was processed using Intellectus Statistics Software. Three analysis of variance (ANOVA) tests were conducted to identify differences in Asthma Training, Asthma Competence, and Asthma Confidence between the pretest-posttest and follow-up tests. Participants who did not complete the Likert Scales or selected point 6 not applicable were removed. As a result, 13 participants were removed from the pretest, eight from the posttest, and no participants from the follow-up test.

ANOVA Asthma Training by Test

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Asthma Training Overall by pretest-posttest.

Results

The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, $F(2, 56) = 4.23$, $p = .019$, indicating there were significant differences in Asthma Training Overall among the levels of Tests (see Table 3). The eta squared was 0.13 indicating the pretest-posttest explains approximately 13% of the variance in Asthma Training Overall. The means and standard deviations are presented in Table 4.

Table 3

Analysis of Variance Table for Asthma Training Overall by Test

Term	SS	df	F	p	$\eta_p 2$
Test	4.66	2	4.23	.019	0.13
Residuals	30.79	56			

Figure 4

Means of Asthma Training Overall by Test with 95.00% CI Error Bars

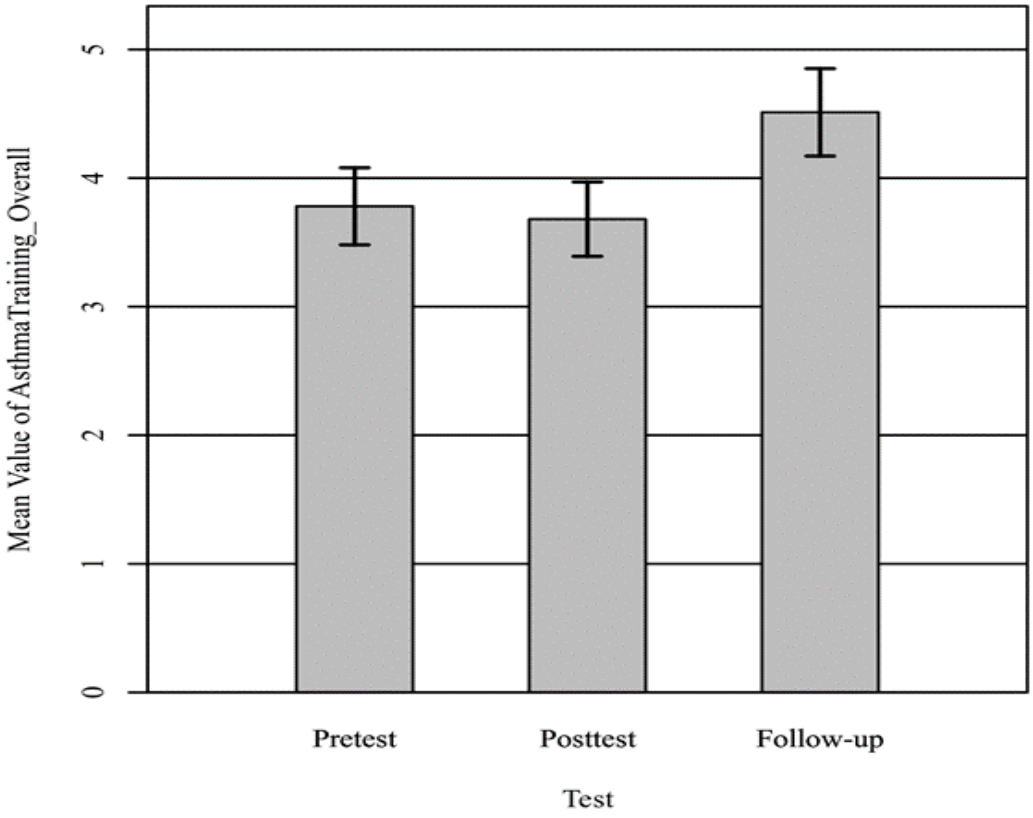


Table 4

Mean, Standard Deviation, and Sample Size for Asthma Training Overall by Test

Combination	*M*	*SD*	*n*
Pretest	3.78	0.84	30
Posttest	3.68	0.66	20
Follow-up	4.51	0.52	9

Post-hoc

Paired *t*-tests were calculated between each pair of measurements to further examine the differences among the variables based on an alpha of .05. For the main effect of the test, the mean of asthma training overall for pretest (M = 3.78, SD = 0.84) was significantly smaller than for follow-up (M = 4.51, SD = 0.52), p = .032. For the main effect of the test, the mean of asthma training overall for the posttest (M = 3.68, SD = 0.66) was significantly smaller than for Follow-up (M = 4.51, SD = 0.52), p = .019 (see Figure 4 and Table 4). No other significant effects were found.

ANOVA Asthma Competence

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Competence by Test.

Results

The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, $F(2, 77) = 9.94$, $p < .001$, indicating there were significant competence differences among the levels of Test (see Table 5). The eta squared was 0.21 indicating Asthma Test explains approximately 21% of the competence variance. The means and standard deviations are presented in Table 6 and in Means of Asthma Competence by test with 95.00% CI error Bars (see figure 5).

Table 5

Analysis of Variance Table for Asthma Competence by Test

Term	*SS*	*df*	*F*	*p*	η_p^2
Test	0.52	2	9.94	< .001	0.21
Residuals	2.00	77			

Figure 5

Means of Asthma Competence by Test with 95.00% CI Error Bars

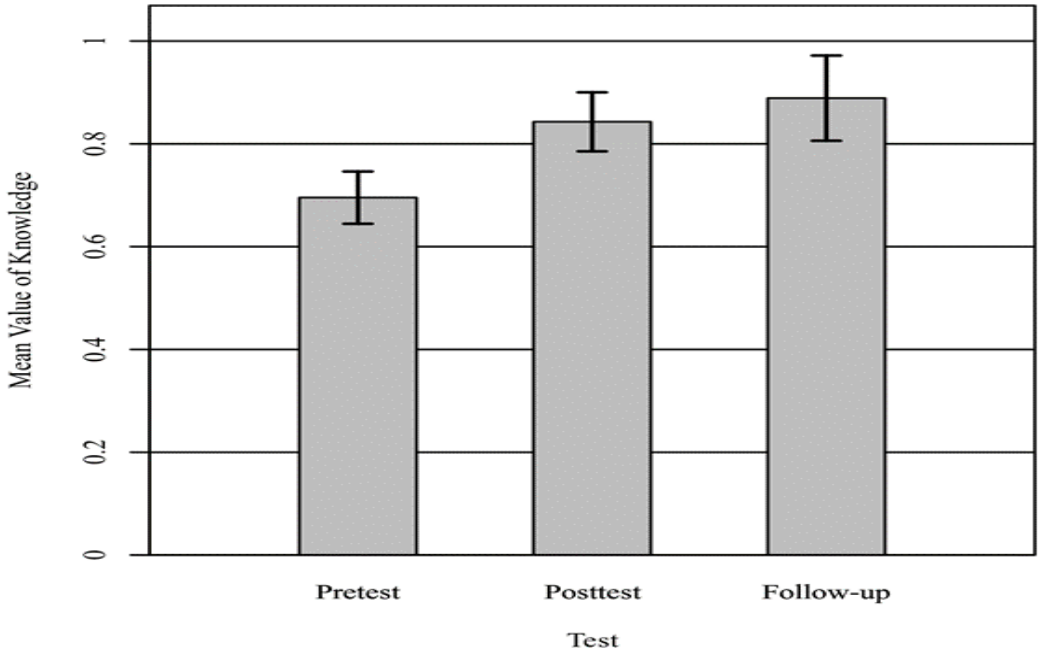


Table 6

Mean, Standard Deviation, and Sample Size for Asthma Competence by Test

Combination	*M*	*SD*	*n*
Pretest	0.70	0.17	43
Posttest	0.84	0.15	28
Follow-up	0.89	0.13	9

Post-hoc

Paired *t*-tests were calculated between each pair of measurements to further examine the differences among the variables based on an alpha of .05. For the main effect of the test, mean Asthma Competence for Pretest ($M = 0.70$, $SD = 0.17$) was significantly smaller than for the

posttest (M = 0.84, SD = 0.15), $p < .001$. For the main effect of the Test, the mean Asthma Competence for Pretest (M = 0.70, SD = 0.17) was significantly smaller than for the Asthma Follow-up (M = 0.89, SD = 0.13), $p = .004$. No other significant effects were found.

ANOVA Asthma Confidence by Test

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in Confidence by Test.

Results

The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were not significant, $F(2, 77) = 2.28$, $p = .109$, indicating the differences in Confidence among the levels of Test were all similar (Table 6). The main effect of the tests was not significant, $F(2, 77) = 2.28$, $p = .109$, indicating there were no significant differences in Asthma Confidence and Competence by Test levels. The means and standard deviations are presented in Table 7.

Table 6

Analysis of Variance Table for Asthma Confidence by Test

Term	*SS*	*df*	*F*	*p*	$\eta_p 2$
Test	3.05	2	2.28	.109	0.06
Residuals	51.33	77			

Table 7

Mean, Standard Deviation, and Sample Size for Confidence by Test

Combination	*M*	*SD*	*n*

Pretest	3.99	0.80	43
Posttest	3.97	0.92	28
Follow-up	4.60	0.45	9

Post-hoc

There were no significant effects in the model. As a result, post-hoc comparisons were not conducted. Two-Tailed Paired Samples *t*-Test

Introduction

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of Confidence and Competence was significantly different from zero.

Results

The result of the two-tailed paired samples *t*-test was *not significant* based on an alpha value of .05, $t(58) = 1.92$, $p = .060$, indicating the null hypothesis cannot be rejected. This finding suggests the difference in the mean of Confidence and the mean of Competence was not significantly different from zero. The results are presented in Table 8. A bar plot of the means is presented in Figure 6.

Table 8

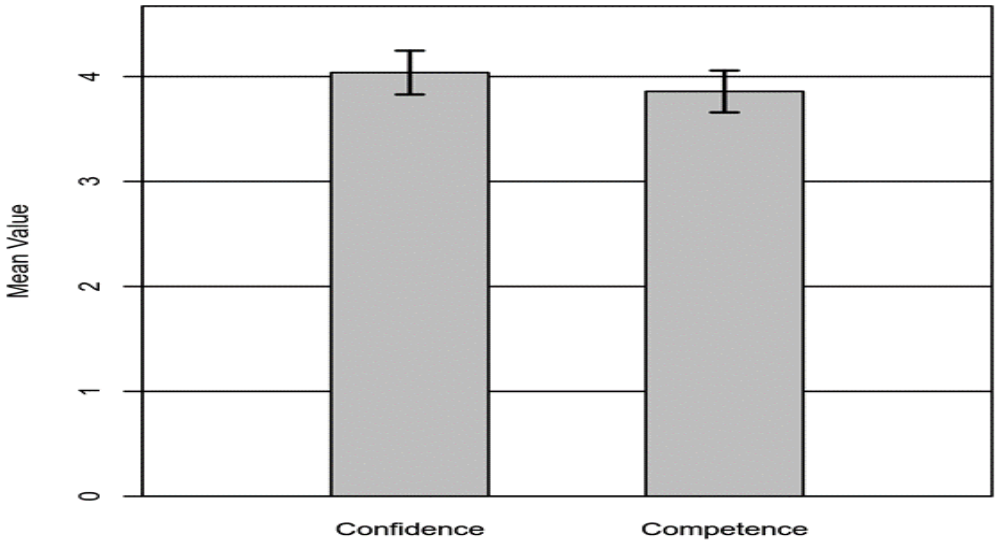
Two-Tailed Paired Samples t-Test for the Difference Between Confidence and Competence

Confidence		Competence				
M	*SD*	*M*	*SD*	*t*	*p*	*d*
4.04	0.82	3.86	0.78	1.92	.060	0.25

Note. N = 59. Degrees of Freedom for the *t*-statistic = 58. *d* represents Cohen's *d.*

Figure 6

The means of Asthma Confidence and Competence with 95.00% CI Error Bars



Two-Tailed Wilcoxon Signed Rank Test

Introduction

A two-tailed Wilcoxon signed rank test was conducted to examine whether there was a significant difference between Confidence and Competence.

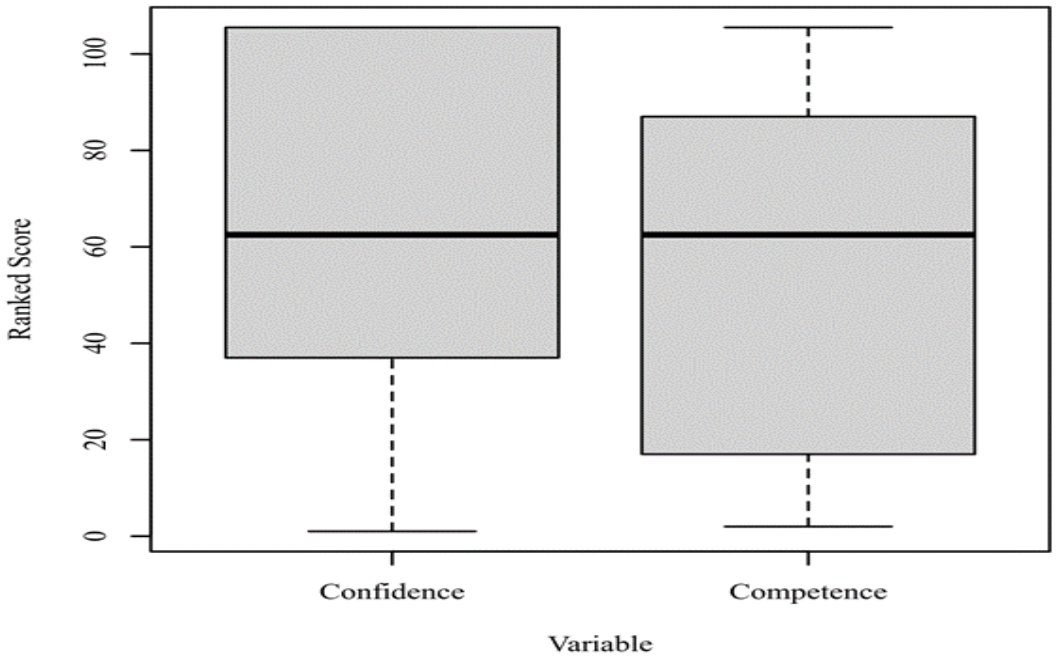
Results

The results of the two-tailed Wilcoxon signed rank test were significant based on an alpha value of .05, $V = 510.00$, $z = -2.03$, $p = .042$. This indicates that the differences between

Asthma Confidence and Asthma Competence are not likely due to random variation. The median of Asthma Confidence (*Mdn* = 4.00) was significantly lower than the median of Asthma Competence (*Mdn* = 4.00). Figure 7 presents a boxplot of the ranked values of Confidence and Competence.

Figure 7

Ranked values of Asthma Confidence and Asthma Competence



Findings

This Quasi Experimental single group quantitative Quality Improvement (QI) project aimed to evaluate the impact of an evidence-based Asthma Basics training. The American Lung Association Evidence-Based Asthma Basics Training guidelines provide a standardized process for the health office staff to implement when caring for students with asthmatic events in the school setting. Children with asthma are entitled to an asthma-safe and trigger-free school

environment. The CSN is in the position to give evidence-based training and impact asthma care outcomes to increase asthma safety and trigger-free schools. Serebrisky et al. (2019) report that asthma cases in children are rising and have remarkably increased over the last four decades. The trend is a concern, and in the absence of CSNs in the schools and high CSN to student ratios, it is essential to strengthening unlicensed school staff's competence and confidence in asthma care. This QI project found that asthma care competence improved by implementing Asthma Basics evidence-based training.

Significant outcomes were observed over the Asthma Test categories in the project variables (see Table 1). The ANOVA conducted for asthma levels of testing was significant with a p=0.19. The findings indicate a change through evidence-based Asthma Basics Training among participants with 3-7 years of experience, followed by over 11 years of experience exhibiting significant results. A Cronbach's alpha coefficient was calculated for asthma training over the testing phases, resulting in a coefficient of .96, indicating excellent reliability. An ANOVA Competency by Test was performed, indicating significant differences in participant competency among the Test levels with a p=<.001. No significant changes in asthma care confidence were discovered in the confidence ANOVA by Test as evidenced in the boxplot of the ranked values of Confidence and Competence (see figure 7). The confidence of ANOVA by Test indicated the need for ongoing skills development training opportunities. GINA, (2021) supports the implementation of asthma management strategies into health systems to improve asthma care and patient outcomes by integrating evidence-based recommendations nationally and locally to improve asthma management with consideration of socioeconomic conditions and culture.

Discussion

This Quality Improvement Project aimed to increase the competence and confidence of elementary school district health staff responsible for caring for students with various health conditions and caring for school children with asthma exacerbations. McCabe, et al. (2019) report that childhood asthma has reached disproportionate levels and has become the most common chronic respiratory disease in children. In addition, Dharmage, et al. (2019) state that pediatric asthma in the United States (US) has become a primary non-communicable epidemic affecting children's health, attendance, learning, and overall school success. Therefore, it is essential to evaluate the school health office staff's competence and confidence with asthma care and ensure that they have access to up-to-date, evidence-based asthma guidelines and that children affected by asthma receive quality care and management when in school. In addition, staff must be evaluated with a standardized skill check off tool to evaluate competence and confidence in providing safe asthma care during an asthma attack, minimizing asthma triggers in school, recognizing symptoms, and mitigating hospitalizations.

Implications of Findings

Post-intervention findings indicate that greater than 50% of the health office staff felt confident in reading an asthma action plan, caring for children with asthma symptoms, level of comfort using a peak flow device, identifying asthma symptoms, asthma medication administration guidelines, and using a spacer. There were 45 potential participants for the Quality Improvement project. The pretest had 43 participants, the posttest had 28 participants, and the follow-up test had 9 participants. Statistically, significant competency was identified by the Likert scale. In addition, approximately 25%-50% of participants self-reported increased asthma competency on the posttest and follow-up tests. These results support the importance of the QI project and the need for evidence-based asthma training identified by the literature

review. Jaramillo, et al., (2015) found that school staff reported they did not have the knowledge or confidence to assist students with asthma symptoms or know how to manage a child experiencing asthma symptoms. School staff disclosed relying on school nurses to manage asthma. School staff described confidence in working with asthma health emergencies as low, fears of medical emergencies and fears of not using the inhaler and delivery tools properly, and fear of a lawsuit was cited. Unfortunately, school nurses are not always present in the health offices to assist a child experiencing an asthma exacerbation. Findings support the increased need for persistent asthma evidence-based training opportunities for school staff and prioritizing continued training.

The data indicates that school office staff acquired an understanding of asthma basics, asthma prevalence, average asthma-related absences, asthma airway changes, bronchoconstriction location, inflammation symptoms, asthma care plan yellow zone significance, the goal of effective asthma care, frequency of albuterol use, rules of twos, and providing a safe asthma trigger environment in the school setting.

Limitations

This QI project had few limitations. First, the project sample size consisted of (n=43) participants in the pretest. Attrition was observed over the testing period, and lower participation was recorded in the posttest and follow-up tests, which should be considered. Second, the timeline was not directly affected. However, the project was impacted highly due to the rollout date of August 2021, which coincided with the COVID-19 Delta variant pandemic peak. Before the COVID-19, Delta-peak cases were on a downward trend; universal indoor masking guidelines were removed and then reinstated a short time after. School reopening's were threatened, but schools opened on schedule with modified guidelines and mitigation efforts put

into effect by the County of Los Angeles Department of Public Health Order of the Health Officer-Appendix T-1 Reopening Protocol for K-12 Schools (LACDPH, 2021). Schools reopened on August 10, 2021, shortly after the COVID-19 surge began. A challenging period followed as school CSN's and administrators raced to organize a contact tracing program, provide staff training, implement LACDPH guidelines, create educational handouts, set up testing sites and COVID-19 vaccination clinics.

Third, the school and health office staff experienced high workloads for several months, and many participants were unable to initiate the asthma basics training module until late October or early November. The lack of participant buy-in due to unprecedented COVID-19 pandemic peaks was due to short staffing, work backlog, lack of time to complete the training module, and skills check. Although there were several timeline challenges, working with the participant's schedule and remaining in contact with flexibility helped keep the project moving forward. W.K. Kellogg Foundation (2004) promotes using the logic model to effectively ensure a strategy to involve participants and address their concerns from the beginning of the program to ensure its success. Finally, not all participants completed the pretest, posttest, and follow-up test. As a result, significant attrition of participation is evident over time (see Figure 3).

Conclusion

Despite substantial advances in pediatric asthma management, asthma continues to affect up to 10% of school-age children in the United States and creates substantial asthma disparities, particularly in the underserved population (Perry et al., 2019). The American Academy of Pediatrics (2020) recognizes that a coordinated team effort effectively reduces disparities. Credentialed school nurses (CSN's) are in a critical position to take steps to impact asthma disparities. However, CSN shortages are a limiting factor and a setback. In the absence of a CSN

at school sites, health office staff are optimal for assisting children with asthma and linking them to the credentialed school nurse and community resources.

This Quality Improvement project effectively used proven and practical strategies to support school health staff to increase asthma competence and confidence. Evidence-based asthma training is a practical approach to closing the gap in asthma disparities and increasing attendance and academic achievement. Consequently, extending the evidence-based Asthma Basics training to all school staff and modifying it to extend to parents and students in an age-appropriate module is recommended to reduce the prevalence of asthma in schools. Serebrisky, et al. (2019) note that the global initiative for GINA Main Report (2021) guidelines recommend that healthcare officials and primary care providers implement and sustain asthma programs to reduce the burden of asthma and improve asthmatic children's quality of life and their families.

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Table

Table 1. Variable and Operational Definitions

Variable Name	Operational Definition
Outcome	**Measured by**
Level of Comfort Assisting with Inhaler and Spacer	Self-Reported Likert Score on Scale of 1-5
Level of Asthma Knowledge/Competence	Total score on the Green Book Specialized Procedure-Asthma Skills Check-Off Rubric
Level of Asthma Comfort/Confidence	Self-Reported Likert Score on Scale of 1-5
Level of Comfort Reading Asthma Action Plan	Self-Reported Likert Score on Scale of 1-5
Asthma Basics PowerPoint Effectiveness	Percentage Correct Responses on Pretest-Posttest knowledge questions.

Appendixes

Appendix A- Form L-1, Section 3: Asthma; *The Green Book: Guidelines for Specialized Physical Health-Care Services in Educational Settings 3rd Ed.* (2020)

TRAINING, EVALUATION, and REVIEW RECORD
Qualified Designated School Staff Performance of Health-Care Procedure
Management of Asthma Episode Response & Assistance with Medication/Equipment
(Staff Member Record)

Name of Staff:	Position:
School Nurse:	District/Site:
CPR Expiration Date:	

Procedure – Essential Steps	Verbal/Return Demonstration (Enter Evaluation Code)								
DATE:									
A. States name and purpose of procedure									
B. Preparation: 1. Reviews standard precautions.									
2. States general signs & symptoms of asthma.									
3. States when the procedure is indicated.									
4. States location of asthma medication.									
5. States signs & symptoms of asthma emergency & actions to take, including calling 9-1-1 emergency services.									
C. Identifies supplies and equipment for procedure.									
D. Assess student safety/safety issues.									
E. Performs steps as specified in the attached procedure.									
☐ Asthma Episode Response									
☐ Asthma Action Plan									
☐ Metered-dose Inhaler									
☐ Peak Flow Meter									
☐ Mechanical Nebulizer									
F. Documents performance of procedure and student's response.									

Instructor Signature:	Initials:	Title:	Date:
Staff Member Signature:	Initials:	Title:	Date:

Directions: Date and initial in designated space. Include identifying signature at the bottom of page only once.
Evaluation Code: S = Satisfactory NI = Needs Improvement U = Unsatisfactory

Appendix B-Evidence Based Asthma Basics Training Project Google Slide Deck

Asthma Basics

AMERICAN LUNG ASSOCIATION.

ASTHMA BASICS

AMERICAN LUNG ASSOCIATION.

Presented and Modified by Teresa Eligio, RN, MSN, FNP-BC,
DNP Student The Valley Foundation School of Nursing, SJSU

1

Stop here and complete the Pretest

https://forms.gle/kBaf9auCk8nrsAdz6

STOP

Scan QR code or click on the link
thank you!

AMERICAN LUNG ASSOCIATION.

2

Asthma Basics Module

Thank you for participating in the pretest after submitting your responses please copy the password

Password: 8FyA7d^2

Click on the link to begin the the module :

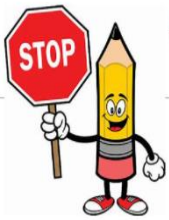
https://ewcsd-org.zoom.us/rec/share/qlCrX7kHoKQZ8CpLPJBDruf8Xp5siD0UL65gs4CkqSMfE3eap1VLk-wWtOPs8sJj.AjY0nZRqTgk2z0LH

https://ewcsd-org.zoom.us/rec/share/i8vaNi5OK2z8qtRT_5wDUvYOUv-cghtZjYaG4lfyggwC1p25H4Ulu0xskVQnM44M.kjTTA8rSwkNqlPoJ?startTime=1628058326000

If you have any difficulty accessing the tests or presentation call Teresa at (818) 809-6734.

AMERICAN LUNG ASSOCIATION.

3



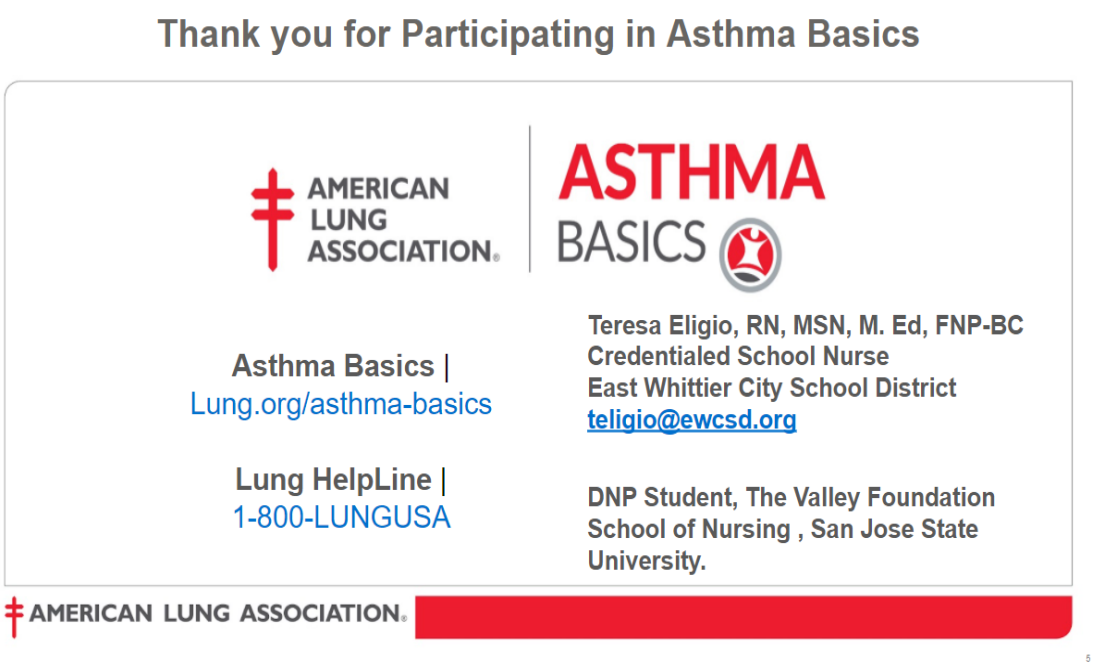
Stop here and complete the Posttest

https://forms.gle/kBaf9auCk8nrsAdz6

Scan QR code or click on the link thank you!

AMERICAN LUNG ASSOCIATION.

4


Thank you for Participating in Asthma Basics
AMERICAN LUNG ASSOCIATION.
ASTHMA BASICS
Asthma Basics |
Lung.org/asthma-basics
Lung HelpLine |
1-800-LUNGUSA
Teresa Eligio, RN, MSN, M. Ed, FNP-BC
Credentialed School Nurse
East Whittier City School District
teligio@ewcsd.org
DNP Student, The Valley Foundation School of Nursing , San Jose State University.
AMERICAN LUNG ASSOCIATION.

Appendix C- Modified Asthma Basics PowerPoint

Slide Deck	Link
Asthma Basics PowerPoint Modified	https://docs.google.com/presentation/d/1dPXJ9PDTO4mgrt8Bk6OYngevaJe8WW3w8pUo6kqWZOU/edit?usp=sharing

Appendix D-Asthma Emergency Response Procedure

(Emergency Procedure Checklist)

SCHOOL EMERGENCY RESPONSE PROCEDURE

SEVERE ASTHMA EPISODE

STAY WITH STUDENT

NEVER LEAVE STUDENT WITH BREATHING DIFFICULTY ALONE DO NOT ALLOW STUDENT WITH BREATHING DIFFICULTY TO WALK ANYWHERE

Call the school nurse: IN COLLABORATION WITH CREDENTIALED SCHOOL NURSE

IF STUDENT

IS UNABLE TO SPEAK, UNRESPONSIVE, UNCONSCIOUS

CONSIDER GIVING STOCK EPINEPHRINE AUTO-INJECTOR, IF SUSPECTED *ANAPHYLAXIS*

AVOID DELAY: CALL 9-1-1, THEN CALL FOR HELP

IF YOU SEE THIS:

1. **BREATHING:** SQUEAKY SOUNDS, WHEEZING, CONTINUOUS COUGHING, RAPID BREATHING, OR BREATHING WORSE EVEN AFTER MEDICATION;
2. **SPEAKING:** SHORT/CHOPPY SENTENCES OR DIFFICULTY SPEAKING;
3. **LOOKING:** RESTLESS, HUNCHING OVER, GRAY/BLUE LIPS OR FINGERNAILS, OR SUCKING- IN OF SKIN IN NECK AREA, RIBS, OR ABDOMEN WITH BREATHING.

DO THIS:

1. **STAY WITH STUDENT. SEAT STUDENT UPRIGHT - DO NOT LET STUDENT LIE DOWN.**
2. **GIVE 2 PUFFS OF QUICK-RELIEF INHALER IF AVAILABLE.**
3. **CONSIDER GIVING STOCK EPINEPHRINE AUTO-INJECTOR PER MANUFACTURER GUIDELINES. (If allergic reaction-see anaphylaxis guidance in yellow epi pen box in health office).**
4. **CALL 9-1-1. CALL FOR HELP.**
5. **STAY WITH STUDENT UNTIL PARAMEDICS ARRIVE.**
6. **NOTIFY PARENT / GUARDIAN**
7. **FOLLOW ASTHMA ACTION PLAN.**
8. **WATCH BREATHING:**
   BE PREPARED TO ADMINISTER CPR UNTIL PARAMEDICS ARRIVE.
9. **COMPLETE EMERGENCY RESPONSE REPORT.**

Form G, Section 3: Asthma; *The Green Book: Guidelines for Specialized Physical Health-Care Services in Educational Settings 3rd Ed.* (2020)

Appendix E-Asthma Educator Certificate of Attendance

American Lung Association.
Asthma Educator Institute

Rehoboth McKinley Christian Health Care Services

CERTIFICATE OF ATTENDANCE

Non-Physician Participation

***Teresa Eligio*, RN, PHN, MSN, MEd, FNP-BC**

Asthma Educator Institute, (AE-C) Prep Course, Live-Stream, Virtual

Day 1 - Tuesday, March 8, 2021; Day 2 - Wednesday March 9, 2021, Day 3 - Friday, March 11, 2021

Agenda and Faculty:

Day 1 Topics: *12:00-5:00pm CST*		**Day 2 Topics: 12:00 – 6:00pm CST**		**Day 3 Topics: 12:00 – 4:30pm CST**	
Introduction to the Burden of Asthma *Sayantani Sindher, MD*	X	Assessment, Diagnosis, & Monitoring of Asthma *Matthew Sharpe, MD, FAAP, FAAAAI*	X	Factors Contributing to Asthma Exacerbations *Kaharu Sumino, MD, MPH*	X
Asthma Overview *Russell Hopp, DO, FAAP, FAAAAI*	X	Spirometry *Sandra Uhlemeyer, RRT, AE-C, MS, MBA*	X	Asthma Medicine Devices and Demonstration *Darcy Ellefson, RRT, AE-C*	X
Education Principles for a Partnership in Asthma Care *Katie Jett, DPN, MSN, FNP-BC, RN*	X	Asthma Management Pharmacological Therapy *Vinay Mehta, MD*	X	Your Role as an Asthma Educator *Danielle Jakopovic, BSN, RN, CPN, AE-C*	X
Barriers to Adherence and Compliance *Becky Hart, BSN, RN, PHN, NCTTP*	X			Exam Preparation *Molly Ekstrand, BPharm, BCACP, AE-C*	X
Asthma Action Plan: Management Plan Development *Richard Bransford, MD, FAAAAI*	X				

Objectives:

- Provide NHLBI and NAEPP guidelines-directed asthma care to patients, families and with health care providers across all settings
- Identify the various roles of the asthma educator in the clinic, and in the community
- Better prepare for the Asthma Educator Certification Exam (AE-C)

(NOTE: The American Lung Association Asthma Educator Institute Course is not endorsed by the NAECB and participation in the course does not guarantee passing the exam.)

- Network with healthcare providers/educators and organizations surrounding asthma care and asthma care policies

This is to certify that Teresa Eligio **(Participant signature) attended the sessions/topics as indicated above (X).**

Accreditation Statement: This activity has been planned and implemented in accordance with the accreditation requirements and policies of the New Mexico Medical Society (NMMS) through the joint provdership of Rehoboth McKinley Christian Health Care Services (RMCHCS) and American Lung Association in New Mexico. RMCHCS is accredited by the NMMS to provide continuing medical education for physicians.

Credit Statement: RMCHCS designates this live activity for a maximum of 13.0 *AMA PRA Category 1 Credit(s)* ™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

SPONSOR'S SIGNATURE:

Mary L Poel MD

Mary L. Poel, M.D, Director of Continuing Medical Education

Appendix F-Asthma Tests Raw Output-Descriptives; @ teresa.eligio@sjsu.edu
Pretest-Posttest Questionnaire (Google Form)

Question	Pretest	Posttest	2nd Posttest
Q1. The leading health problem in school aged children is?	a. 2.3% diabetes b. 2.3% Allergies **d**. 93% Asthma f. other 2.3%	a. 03.6% diabetes **d.** 96.4%asthma	**d.** Asthma-100%
Q2. In the United States, what is the average number of asthma-related absences in a school year?	a. 16.3%-3 days b. 20.9%-10 days c. 11.6%-20 days **d**. 23.3%-15 days e. 27.9%-greater than 20 .	a. 7.1%-3 days b. 10.7%-10 days c. 64.3%-20 days **d**. 17%-15 days e. 0 %-greater than 20 days	a. 0%-3 days b.11.1%-10 days c. 11.1%-20 days **d**. 55.6%-15 days e. 0%-greater than 20 days
Q3. What are the three primary changes in the airway in children with asthma? *	**a**. 53.5%-inflammation, bronchoconstriction, and increased mucus b.46.5% bronchoconstriction, wheezing, cough	**a**. 85.7%-inflammation, bronchoconstriction and increased mucus b.14.3% bronchoconstriction, wheezing, cough	**a**.77.8%-inflammation, bronchoconstriction and increased mucus b. 22.2% bronchoconstriction wheezing, cough
Q4. Bronchoconstriction is the tightening of…	a. Lungs (20.9%) **b.** Airway (74.4%) c. Throat (2.3%) d. None of the above (2.3%)	a. Lungs (7.1%) **b**. Airway (85.7%) c. Throat (3.6%) d. None of the above (3.6%) .	a. Lungs (10%) **b**. Airway (80%) c. Throat (0%) d. None of the above (0%)

Q5. Inflammation is characterized by redness and swelling?	**a**. True (86%) b**.** False (14%)	**a.** True (82.1%) b. False (17.9%)	**a.** True (90%) b. False (10%).
Q6. What does the yellow zone in an Asthma Action Plan indicate?	a. Child needs a rescue inhaler (4.7%) b. Child does not need the rescue inhaler (4.7%) **c.** May mean Child is having an asthma attack (67.4%) d. a & b (23.3%)	a. Child needs a rescue inhaler (3.6%) b. Child does not need the rescue inhaler (0%) **c**. May mean Child is having an asthma attack (75%) d. a & b (21.4%)	a. Child needs a rescue inhaler (0%) b. Child does not need the rescue inhaler (0%) **c.** May mean Child is having an asthma attack (88.9%) d. a & b (11.1%)
Q7. The goal of effective asthma management is to.....	a. Prevent symptoms (0%) b. Reduce the use of quick-relief medicine (0%) c. Maintain normal activity levels (4.7%) d. Coordinate asthma care with parent/guardian (2.3%) **e.** All of the above (90.7%)	a. Prevent symptoms (3.6%) b. Reduce the use of quick-relief medicine (0%) c. Maintain normal activity levels (0%) d. Coordinate asthma care with parent/guardian (0%) **e**. All of the above (96/4%)	a. Prevent symptoms (0%) b. Reduce the use of quick-relief medicine (0%) c. Maintain normal activity levels (0%) d. Coordinate asthma care with (parent/guardian) (0%) **e.** All of the above (100%)
Q8. Rescue	a. True (9.3%) **b**. False (90.7%)	a. True (0%) **b**. False (100%)	a. True (0%) **b.** False (100%)

inhalers such as albuterol or levalbuterol be taken daily?			
Q9. The rules of two in asthma care mean....	a. Give two quick-relief inhaler rescue puffs back-to-back (27.9%) b. Two quick relief medication doses have been given in two weeks (11.6%) c. A child has had two asthma symptoms in a month (11.9%) d. The rescue inhaler prescription has been refilled twice in one year (2.3%) e. a, b, and c (14%) **f.** b, c, and d (32.6%)	a. Give two quick-relief inhaler rescue puffs back-to-back (10.7%) b. Two quick relief medication doses have been given in two weeks (3.6%) c. A child has had two asthma (7.1%) symptoms in a month d. The rescue inhaler prescription has been refilled twice in one year (14.3%) e. a, b, and c (14.3%) **f.** b, c, and d (64.3%)	a. Give two quick-relief inhaler rescue puffs back-to-back (2.7%) b. Two quick relief medication doses have been given in two weeks (0%) c. A child has had two asthma symptoms in a month (0%) d. The rescue inhaler prescription has been refilled twice in one year (0%) e. a, b, and c (0%) **f.** b, c, and d (92.9%)
Q10. An asthma safe school environment is provided by….	a. Following a home and school asthma action plan (9.3%) b. Obtaining an asthma history (0%) d. School staff participate in asthma education and professional development activities (0%) e. Report a student who has asthma symptoms twice in a two-week period (83.7%)	a. Following a home and school asthma action plan (7.1%) b. Obtaining an asthma history (0%)	a. Following a home and school asthma action plan (0%) b. Obtaining an asthma history (0%)

	f. All the above (83.7%)	d. School staff participate in asthma education and professional development activities (0%) e. Report a student who has asthma symptoms twice in a two-week period (0%) **f.** All the above (92.9%)	d. School staff participate in asthma education and professional development activities (0%) e. Report a student who has asthma symptoms twice in a two-week period (0%) **f.** All the above (100%)

Appendix G- Likert Scale Confidence Raw Output-Descriptives; @ teresa.eligio@sjsu.edu
Likert Scale Self Evaluation of Confidence Level in Asthma Care (Google Form)

Likert Scale Question	Pretest	Posttest	Follow-up (Three Months)
Q 11. Level of comfort reading an asthma action plan	2. (4.7%) Staff responded information is familiar, but I am not comfortable caring for a child with asthma 3. (18.6%) Do not feel fully comfortable, but I can provide competent asthma 4. (48.8%) I understand asthma and am comfortable providing asthma care 5. (27.9%) I can verbalize asthma concepts and provide asthma care very comfortably	1. (3.6%) I am not comfortable this information is new to me 2. (0%) Staff responded information is familiar, but I am not comfortable caring for a child with asthma 3. (25%)-Do not feel fully comfortable, but I can provide competent asthma 4. (42.9%) I understand asthma and am comfortable providing asthma care 5. (28.6%) I can verbalize asthma concepts and provide asthma care very comfortably	1. (0%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (0%) I do not feel fully comfortable, but I can provide competent asthma care 4. (33.3%) I understand asthma and am comfortable providing asthma care 5. (66.7%) I can verbalize asthma concepts and provide asthma care very comfortably

Q 12. Level of comfort caring for children with asthma symptoms	1. (0%) I am not comfortable this information is new to me 2. (2.3%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (12.2%) I do not feel fully comfortable, but I can provide competent asthma care 4. (41.9%) I understand asthma and am comfortable providing asthma care 5. (32.6%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	1. (3.6%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (28.6%) I do not feel fully comfortable, but I can provide competent asthma care 4. (39.3%) I understand asthma and am comfortable providing asthma care 5. (28.6%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	1. (0%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (0%) I do not feel fully comfortable, but I can provide competent asthma care 4. (33.3%) I understand asthma and am comfortable providing asthma care 5. (66.7%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable

Q 13. Level of comfort using a peak flow meter	1. (2.3%) I am not comfortable this information is new to me 2. (9.3%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (30.2%) I do not feel fully comfortable, but I can provide competent asthma care 4. (32.6%) I understand asthma and am comfortable providing asthma care 5. (25.6%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	1. (3.6%) I am not comfortable this information is new to me 2. (3.6%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (28.6%) I do not feel fully comfortable, but I can provide competent asthma care 4. (32.1%). I understand asthma and am comfortable providing asthma care 5. (32.1%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	1. (0%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (11.1%) I do not feel fully comfortable, but I can provide competent asthma care 4. (33.3%) I understand asthma and am comfortable providing asthma care 5. (55.6%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable

Q 14. Level of comfort identifying asthma symptoms	1. (0%) I am not comfortable this information is new to me 2. (4.7%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (18.6%) I do not feel fully comfortable, but I can provide competent asthma care 4. (37.2%). I understand asthma and am comfortable providing asthma care 5. (39.5%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	1. (3.6%) I am not comfortable this information is new to me 2. (3.6%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (14.3%) I do not feel fully comfortable, but I can provide competent asthma care 4. (46.4%). I understand asthma and am comfortable providing asthma care 5. (0%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	1. (0%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma 3. (0%) I do not feel fully comfortable, but I can provide competent asthma care 4. (33.3%) I understand asthma and am comfortable providing asthma care 5. (66.7%) I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable
Q 15. Level of comfort assisting with an inhaler using a spacer	1. (0%) I am not comfortable this information is new to me 2. (2.3%) Information is familiar, but I am not	1. (3.6%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma	1. (0%) I am not comfortable this information is new to me 2. (0%) Information is familiar, but I am not comfortable caring for a child with asthma

	comfortable caring for a child with asthma 3. (25.6%) I do not feel fully comfortable, but I can provide competent asthma care 4. (32.6%). I understand asthma and am comfortable providing asthma care 5. (39.5%)- I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	3. (14.3%) I do not feel fully comfortable, but I can provide competent asthma care 4. (39.3%). I understand asthma and am comfortable providing asthma care 5. (42.9%)- I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable	3. (11.1%) I do not feel fully comfortable, but I can provide competent asthma care 4. (22.2%). I understand asthma and am comfortable providing asthma care 5. (66.7%)- I can verbalize asthma concepts and provide asthma care very comfortably 6. Not applicable

Appendix H- Likert Scale Competence Raw Output-Descriptives; @teresa.eligio@sjsu.edu
Likert Scale Self Evaluation of Competence Level in Asthma Care (Google Form)

Likert Scale Question	Pretest	Posttest	Follow-up (Three Months)
Q 16. Level of knowledge of asthma at start of course	Poor (2.3%) Fair (11.6%) Satisfactory (39.5%) Very Good (27.9%) Excellent (16.3%) N/A (2.3%)	Poor (0%) Fair (7.1%) Satisfactory (50%) Very Good (32.1%) Excellent (10.7%) N/A (0%)	Poor (0%) Fair (0%) Satisfactory (11.1%) Very Good (22.2%) Excellent (66.7%) N/A (0%)
Q 17. Level of knowledge of asthma at end of course	Poor (0%) Fair (2.3%) Satisfactory (25.6%) Very Good (23.3%) Excellent (23.3%) N/A (25.6%)	Poor (0%) Fair (0%) Satisfactory (35.7%) Very Good (46.4%) Excellent (17.9%) N/A (0%)	Poor (0%) Fair (0%) Satisfactory (11.1%) Very Good (33.3%) Excellent (55.6%) N/A (0%)
Q 18. Level of knowledge required to complete the course	Poor (0%) Fair (7.0%) Satisfactory (32.6%) Very Good (27.9%) Excellent (18.9%) N/A (14.0%)	Poor (0%) Fair (3.6%) Satisfactory (42.9%) Very Good (42.9%) Excellent (10.7%) N/A (0%)	Poor (0%) Fair (0%) Satisfactory (0%) Very Good (55.6%) Excellent (44.4%) N/A (0%)
Q 19. Contribution of course to your knowledge	Poor (0%) Fair (4.7%) Satisfactory (30/2%) Very Good (27.9%) Excellent (20.9%) N/A (16.3%)	Poor (0%) Fair (7.1%) Satisfactory (28.6%) Very Good (39.31%) Excellent (0%) N/A (0%)	Poor (0%) Fair (0%) Satisfactory (11.1%) Very Good (33.3%) Excellent (66.7%) N/A (0%)
Q 20. Follow-up knowledge 3 months post asthma training	Poor (0%) Fair (4.65%) Satisfactory (25%) Very Good (25.58%) Excellent (18.60%) N/A (16.3%)	Poor 0 (0%) Fair 0 (0%) Satisfactory (32.1%) Very Good (17.86%) Excellent (21.4%) N/A (28.6%)	Poor (0%) Fair (0%) Satisfactory (11.1%) Very Good (33.3%) Excellent (55.6%) N/A (0%)